FIG. 1

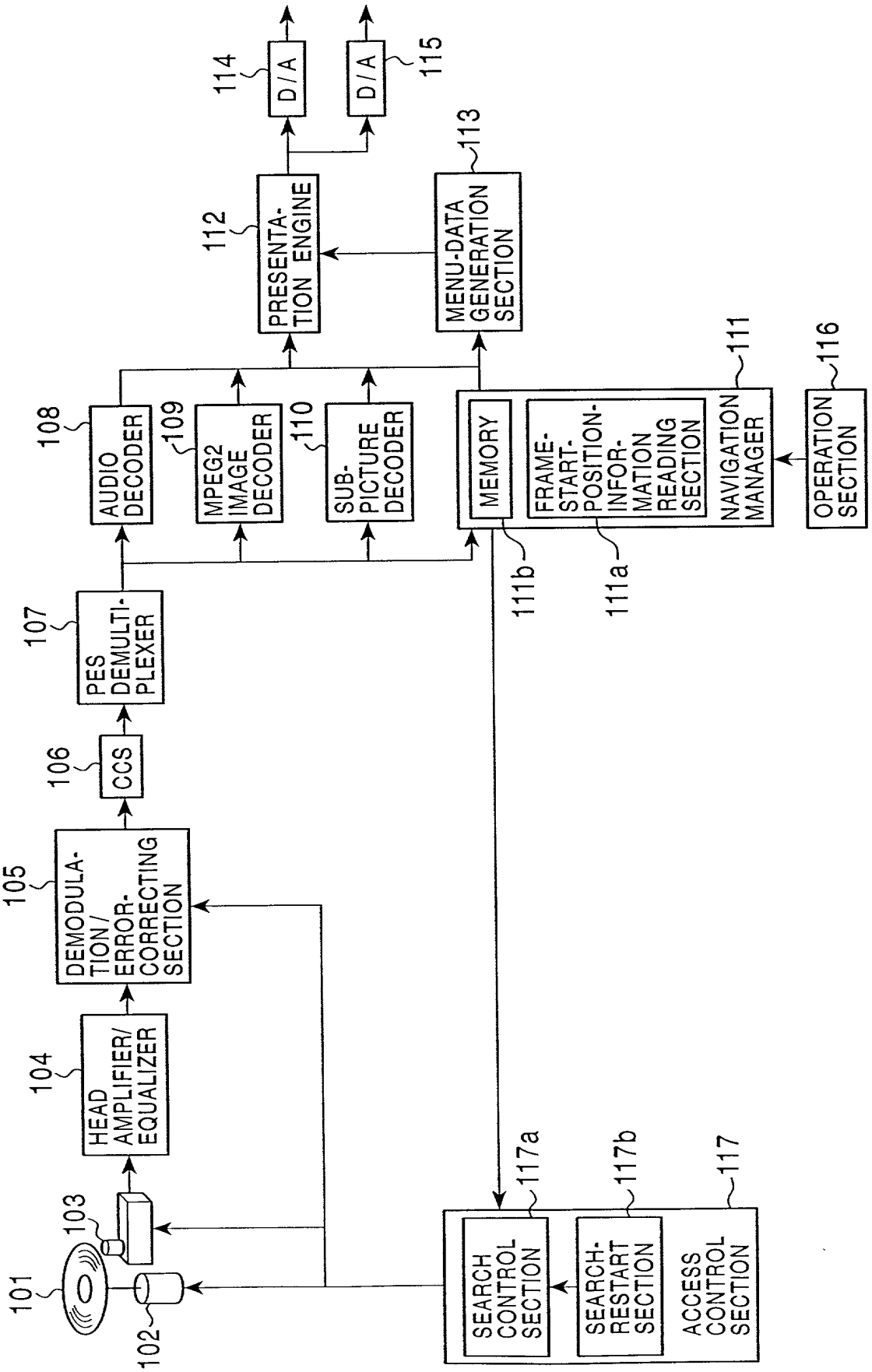

101
102
103
104
HEAD AMPLIFIER/ EQUALIZER
105
DEMODULA-TION/ ERROR-CORRECTING SECTION
106
CCS
107
PES DEMULTI-PLEXER
108
AUDIO DECODER
109
MPEG2 IMAGE DECODER
110
SUB-PICTURE DECODER
111
NAVIGATION MANAGER
111a
FRAME-START-POSITION-INFOR-MATION READING SECTION
111b
MEMORY
112
PRESENTA-TION ENGINE
113
MENU-DATA GENERATION SECTION
114
D/A
115
D/A
116
OPERATION SECTION
117
ACCESS CONTROL SECTION
117a
SEARCH CONTROL SECTION
117b
SEARCH-RESTART SECTION

FIG. 2

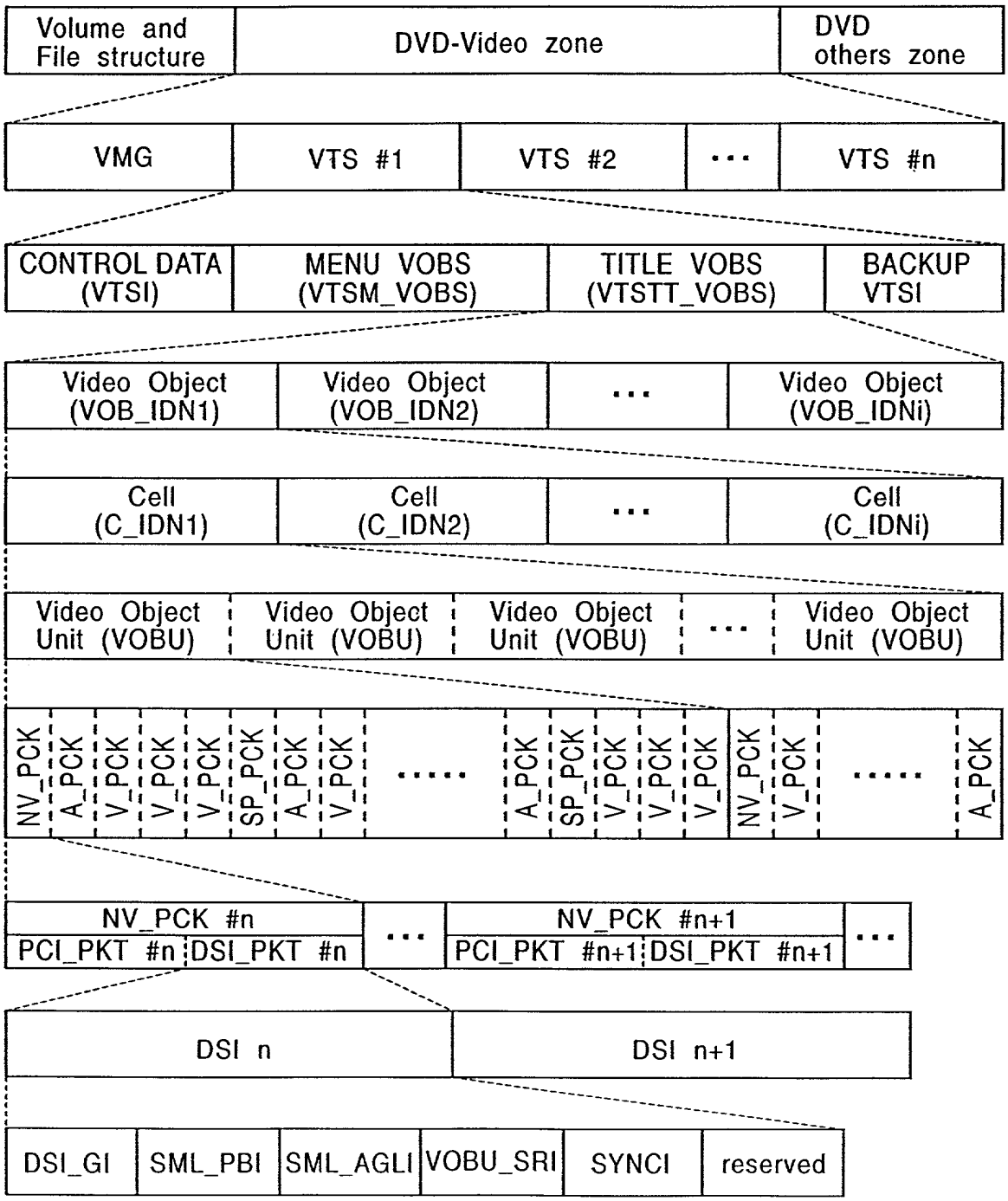

Volume and File structure
DVD-Video zone
DVD others zone
VMG
VTS #1
VTS #2
...
VTS #n
CONTROL DATA (VTSI)
MENU VOBS (VTSM_VOBS)
TITLE VOBS (VTSTT_VOBS)
BACKUP VTSI
Video Object (VOB_IDN1)
Video Object (VOB_IDN2)
...
Video Object (VOB_IDNi)
Cell (C_IDN1)
Cell (C_IDN2)
...
Cell (C_IDNi)
Video Object Unit (VOBU)
Video Object Unit (VOBU)
Video Object Unit (VOBU)
...
Video Object Unit (VOBU)
NV_PCK
A_PCK
V_PCK
SP_PCK
NV_PCK #n
PCI_PKT #n
DSI_PKT #n
NV_PCK #n+1
PCI_PKT #n+1
DSI_PKT #n+1
DSI n
DSI n+1
DSI_GI
SML_PBI
SML_AGLI
VOBU_SRI
SYNCI
reserved

FIG. 3

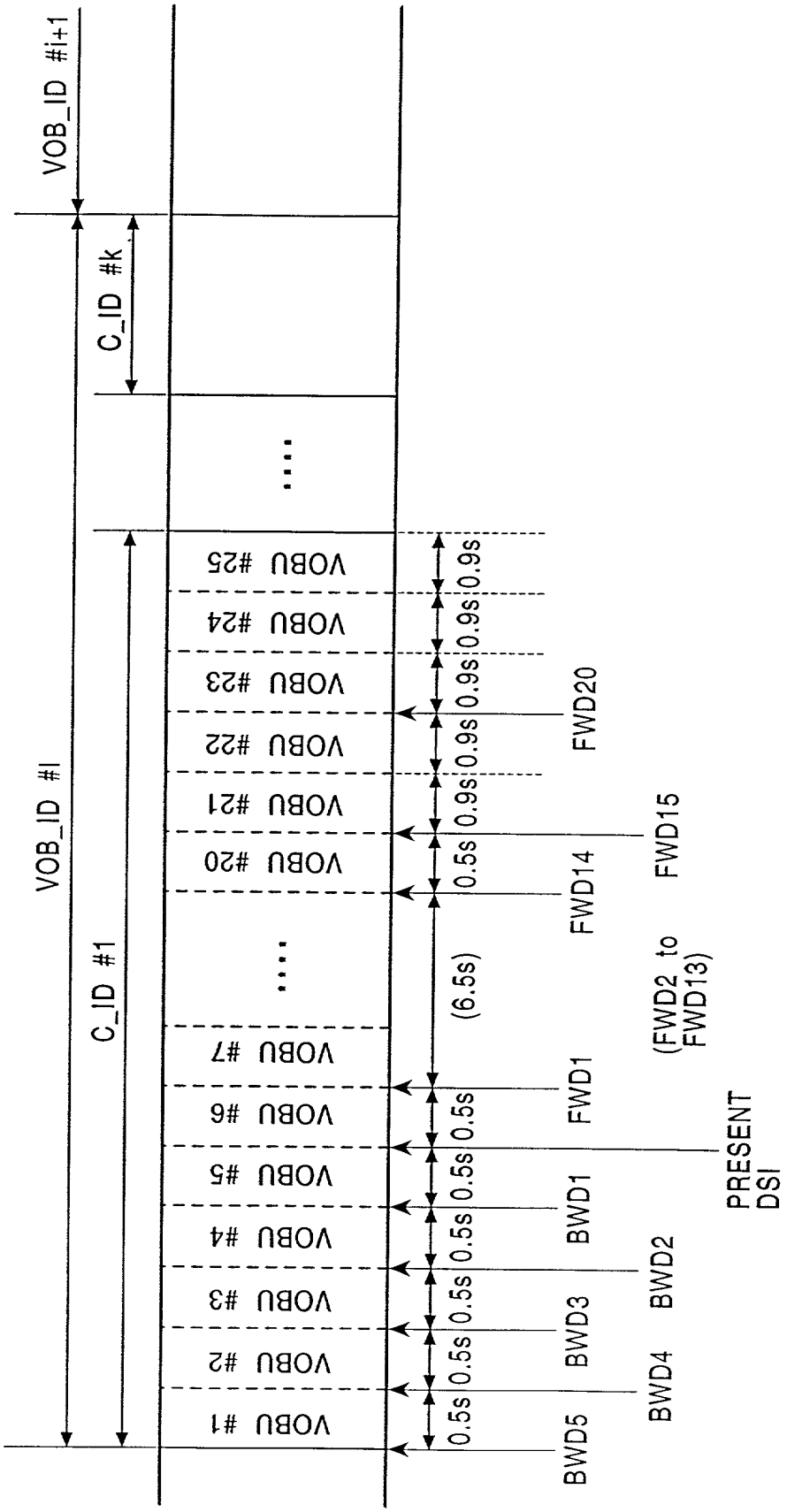

VOB_ID #i+1
C_ID #k
VOB_ID #I
C_ID #1
VOBU #25
VOBU #24
VOBU #23
VOBU #22
VOBU #21
VOBU #20
VOBU #7
VOBU #6
VOBU #5
VOBU #4
VOBU #3
VOBU #2
VOBU #1
0.9s
0.9s
0.9s
0.9s
0.9s
0.5s
(6.5s)
0.5s
0.5s
0.5s
0.5s
0.5s
FWD20
FWD15
FWD14
(FWD2 to FWD13)
FWD1
PRESENT DSI
BWD1
BWD2
BWD3
BWD4
BWD5

FIG. 4

NAME	CONTENT	NO. OF BYTES
FWDI Video	START ADDRESS OF NEXT VOBU HAVING VIDEO DATA	4 BYTES
FWDI 240	START ADDRESS OF +240 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 120	START ADDRESS OF +120 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 60	START ADDRESS OF +60 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 20	START ADDRESS OF +20 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 15	START ADDRESS OF +15 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 14	START ADDRESS OF +14 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 13	START ADDRESS OF +13 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 12	START ADDRESS OF +12 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 11	START ADDRESS OF +11 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 10	START ADDRESS OF +10 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 9	START ADDRESS OF +9 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 8	START ADDRESS OF +8 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 7	START ADDRESS OF +7 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 6	START ADDRESS OF +6 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 5	START ADDRESS OF +5 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 4	START ADDRESS OF +4 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 3	START ADDRESS OF +3 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 2	START ADDRESS OF +2 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI 1	START ADDRESS OF +1 VOBU AND VIDEO STORAGE FLAG	4 BYTES
FWDI Next	START ADDRESS OF NEXT VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI Prev	START ADDRESS OF PRECEDING VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 1	START ADDRESS OF -1 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 2	START ADDRESS OF -2 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 3	START ADDRESS OF -3 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 4	START ADDRESS OF -4 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 5	START ADDRESS OF -5 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 6	START ADDRESS OF -6 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 7	START ADDRESS OF -7 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 8	START ADDRESS OF -8 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 9	START ADDRESS OF -9 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 10	START ADDRESS OF -10 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 11	START ADDRESS OF -11 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 12	START ADDRESS OF -12 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 13	START ADDRESS OF -13 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 14	START ADDRESS OF -14 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 15	START ADDRESS OF -15 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 20	START ADDRESS OF -20 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 60	START ADDRESS OF -60 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 120	START ADDRESS OF -120 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI 240	START ADDRESS OF -240 VOBU AND VIDEO STORAGE FLAG	4 BYTES
BWDI Video	START ADDRESS OF PRECEDING VOBU HAVING VIDEO DATA	4 BYTES

FIG. 5

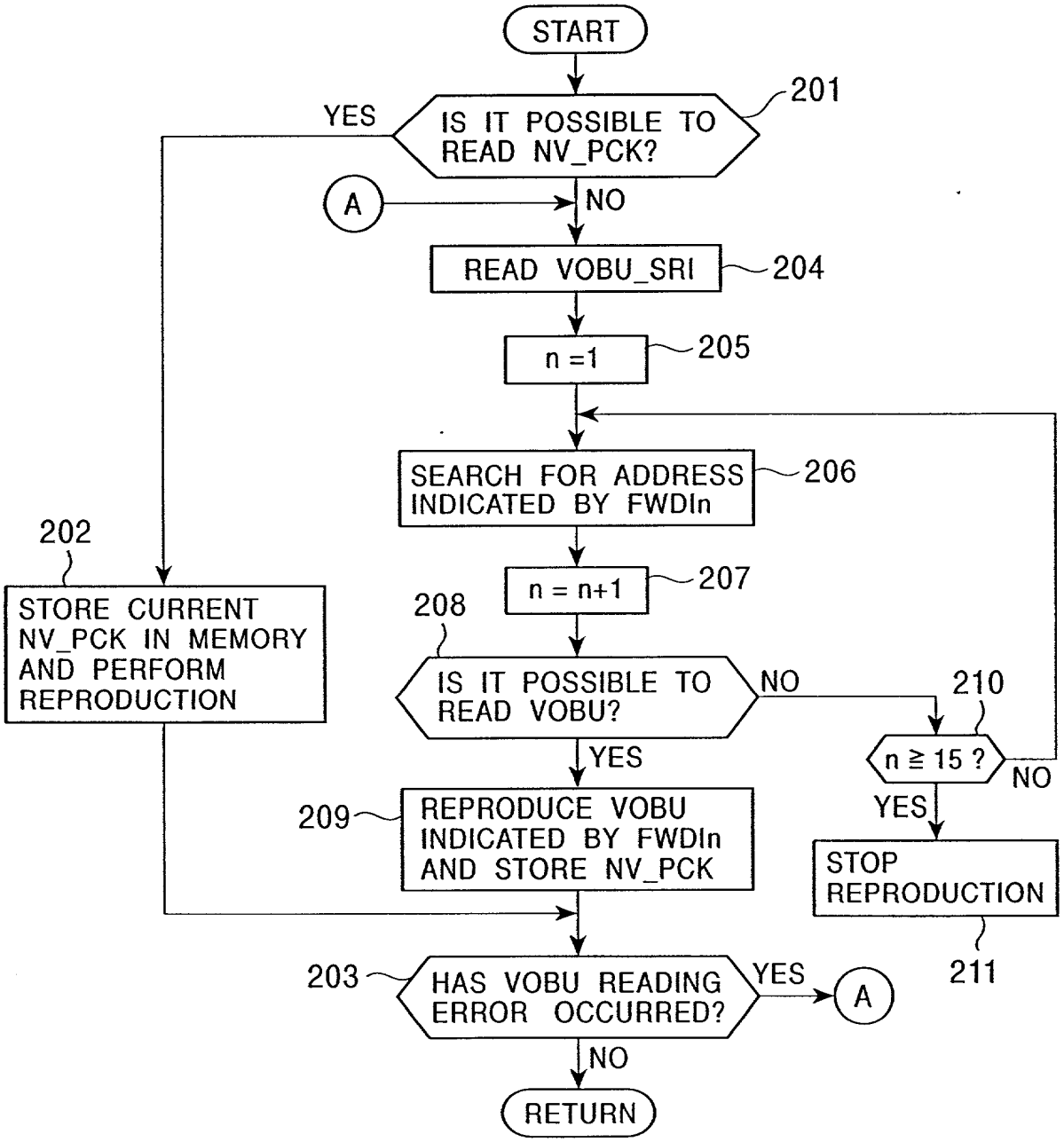

START
IS IT POSSIBLE TO READ NV_PCK?
201
YES
A
NO
READ VOBU_SRI
204
n =1
205
SEARCH FOR ADDRESS INDICATED BY FWDIn
206
202
STORE CURRENT NV_PCK IN MEMORY AND PERFORM REPRODUCTION
n = n+1
207
208
IS IT POSSIBLE TO READ VOBU?
NO
210
n ≧ 15 ?
NO
YES
YES
209
REPRODUCE VOBU INDICATED BY FWDIn AND STORE NV_PCK
STOP REPRODUCTION
211
203
HAS VOBU READING ERROR OCCURRED?
YES
A
NO
RETURN

FIG. 6

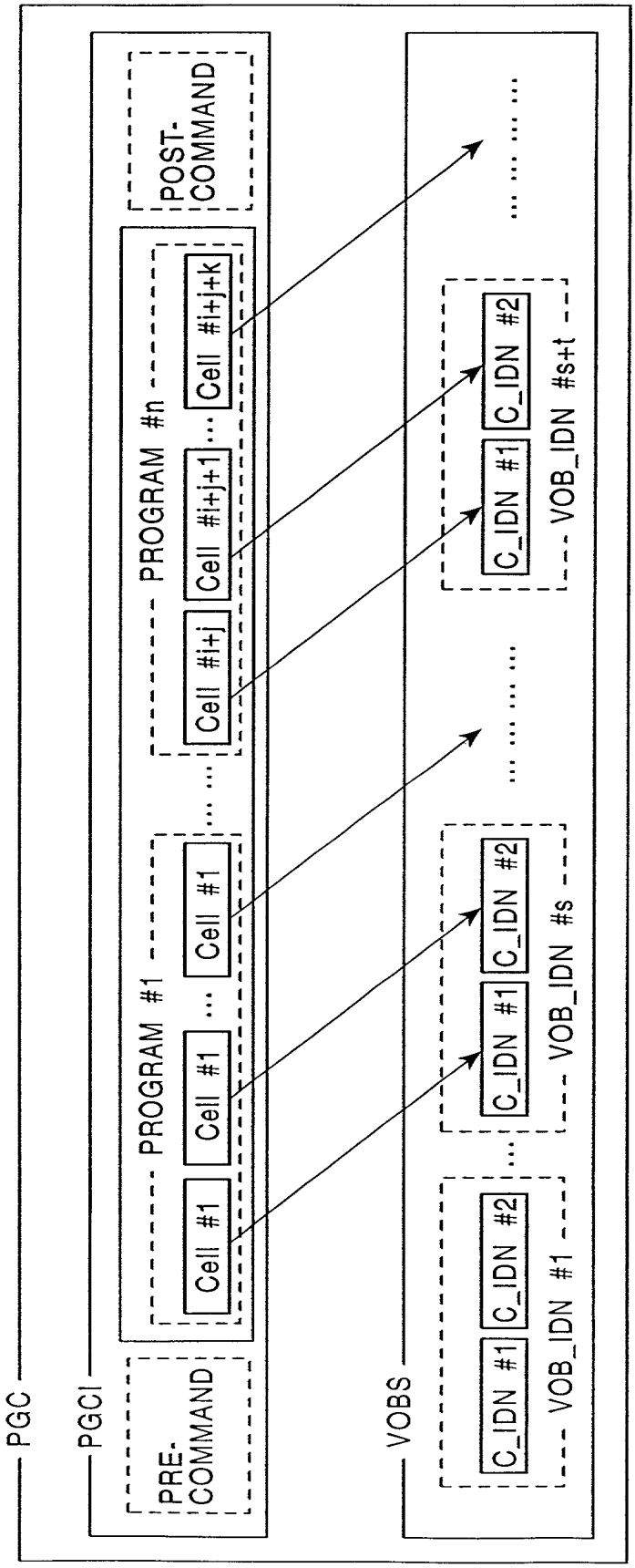

PGC
PGCI
PRE-COMMAND
PROGRAM #1
Cell #1
Cell #1
Cell #1
PROGRAM #n
Cell #i+j
Cell #i+j+1
Cell #i+j+k
POST-COMMAND
VOBS
C_IDN #1
C_IDN #2
VOB_IDN #1
VOB_IDN #s
VOB_IDN #s+t

FIG. 7

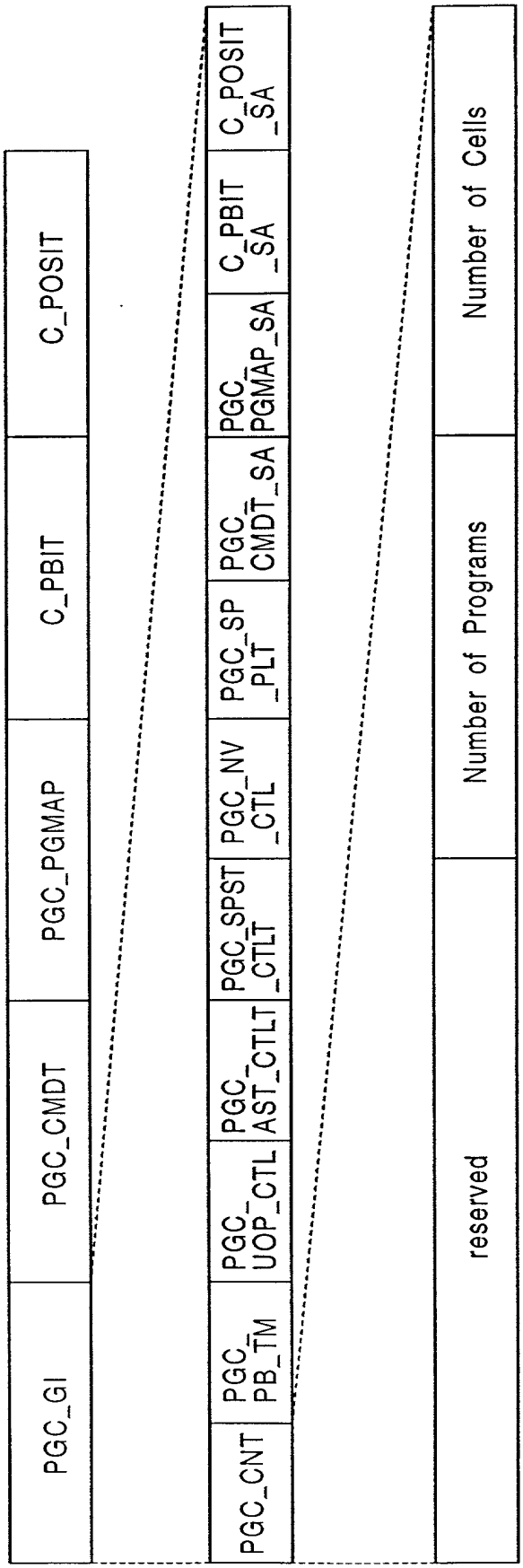

PGC_GI
PGC_CMDT
PGC_PGMAP
C_PBIT
C_POSIT
PGC_CNT
PGC_PB_TM
PGC_UOP_CTL
PGC_AST_CTLT
PGC_SPST_CTLT
PGC_NV_CTL
PGC_SP_PLT
PGC_CMDT_SA
PGC_PGMAP_SA
C_PBIT_SA
C_POSIT_SA
reserved
Number of Programs
Number of Cells

FIG. 8

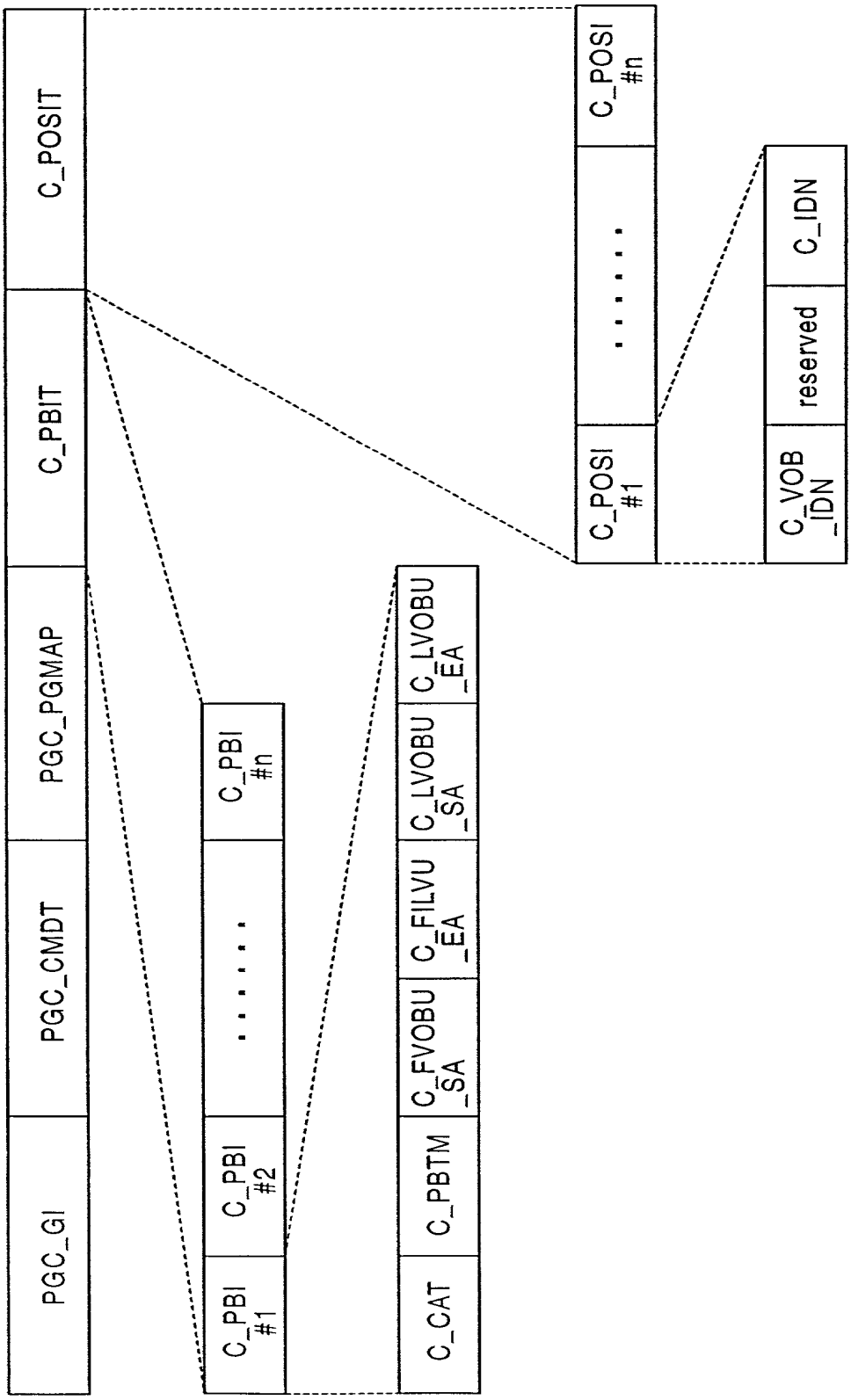

C_POSIT
C_PBIT
PGC_PGMAP
PGC_CMDT
PGC_GI
C_POSI #1
. . . . . .
C_POSI #n
C_VOB _IDN
reserved
C_IDN
C_PBI #1
C_PBI #2
. . . . . .
C_PBI #n
C_CAT
C_PBTM
C_FVOBU _SA
C_FILVU _EA
C_LVOBU _SA
C_LVOBU _EA

FIG. 9

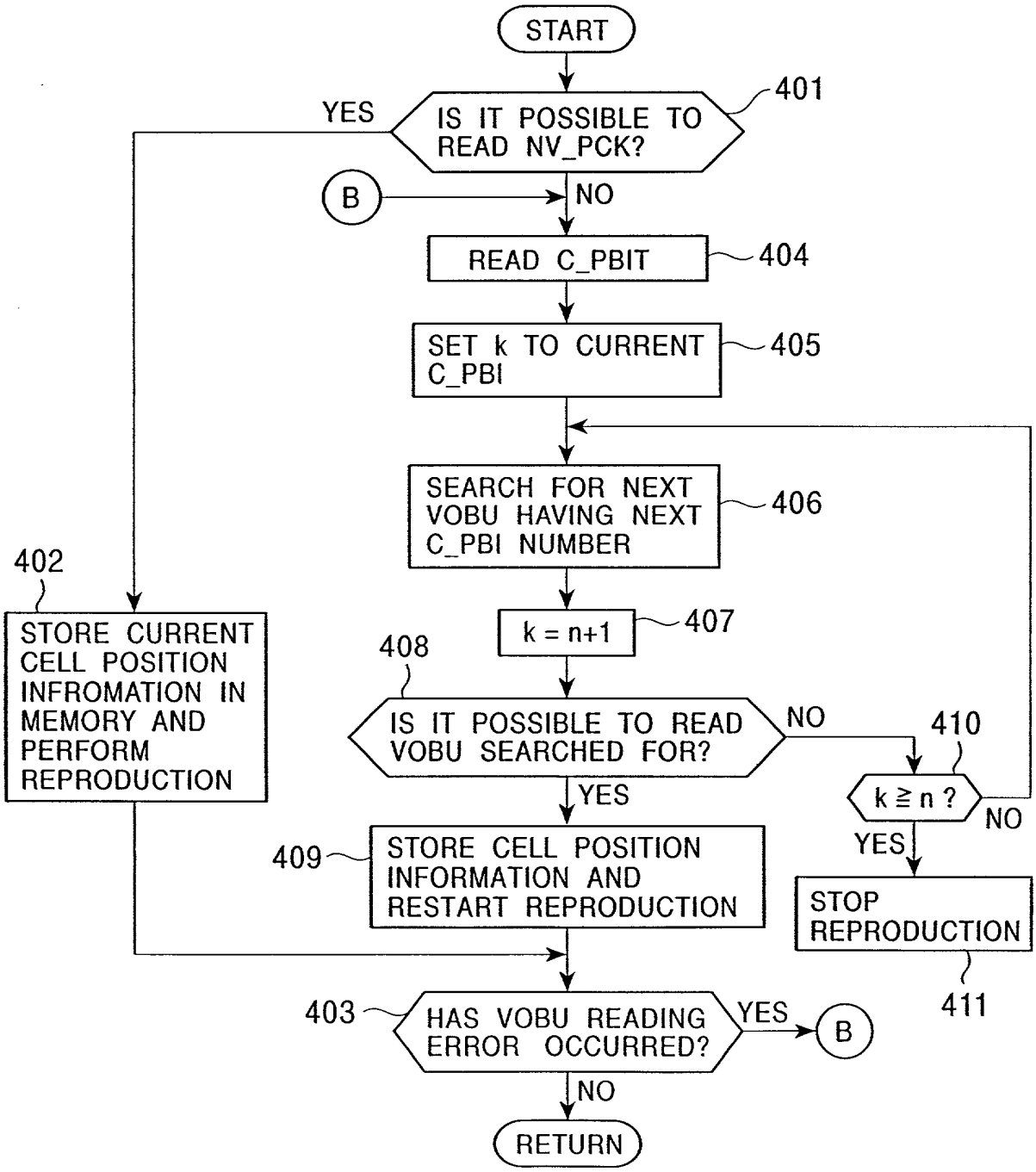

START
401
IS IT POSSIBLE TO READ NV_PCK?
YES
B
NO
READ C_PBIT
404
SET k TO CURRENT C_PBI
405
SEARCH FOR NEXT VOBU HAVING NEXT C_PBI NUMBER
406
402
STORE CURRENT CELL POSITION INFROMATION IN MEMORY AND PERFORM REPRODUCTION
k = n+1
407
408
IS IT POSSIBLE TO READ VOBU SEARCHED FOR?
NO
410
k ≧ n ?
NO
YES
YES
409
STORE CELL POSITION INFORMATION AND RESTART REPRODUCTION
STOP REPRODUCTION
411
403
HAS VOBU READING ERROR OCCURRED?
YES
B
NO
RETURN

FIG. 10

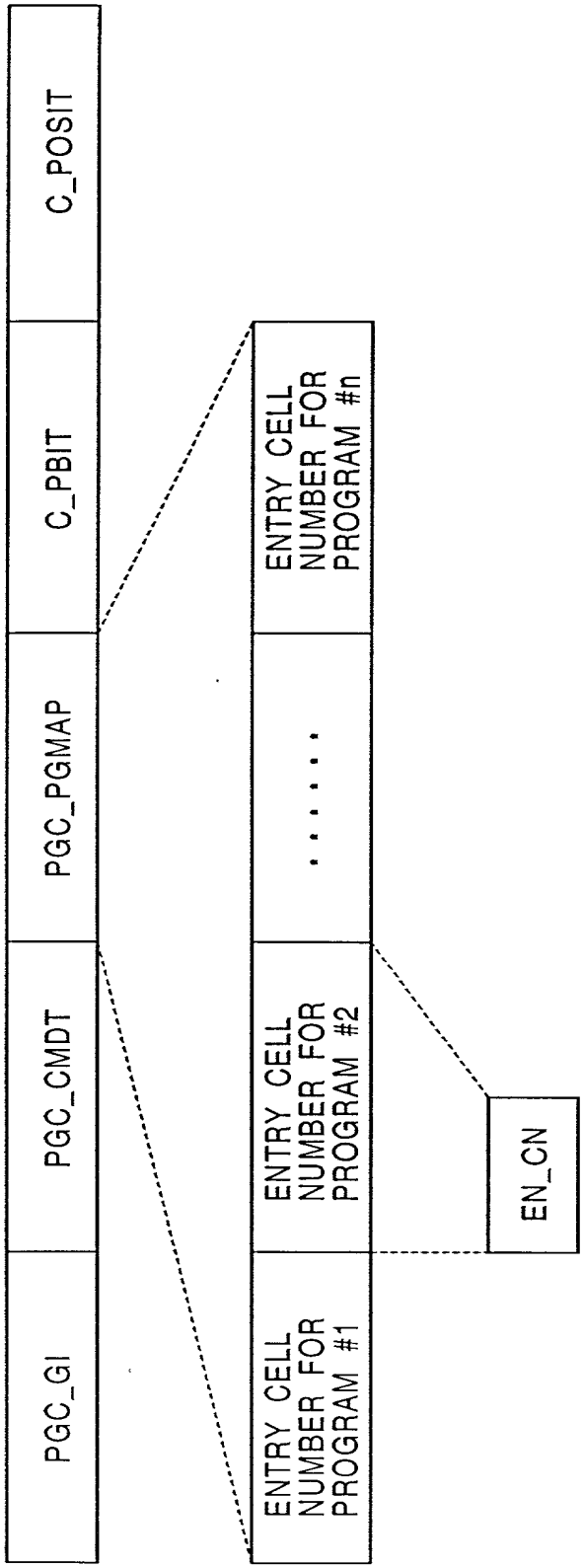

PGC_GI
PGC_CMDT
PGC_PGMAP
C_PBIT
C_POSIT
ENTRY CELL NUMBER FOR PROGRAM #1
ENTRY CELL NUMBER FOR PROGRAM #2
. . . . . .
ENTRY CELL NUMBER FOR PROGRAM #n
EN_CN

FIG. 11

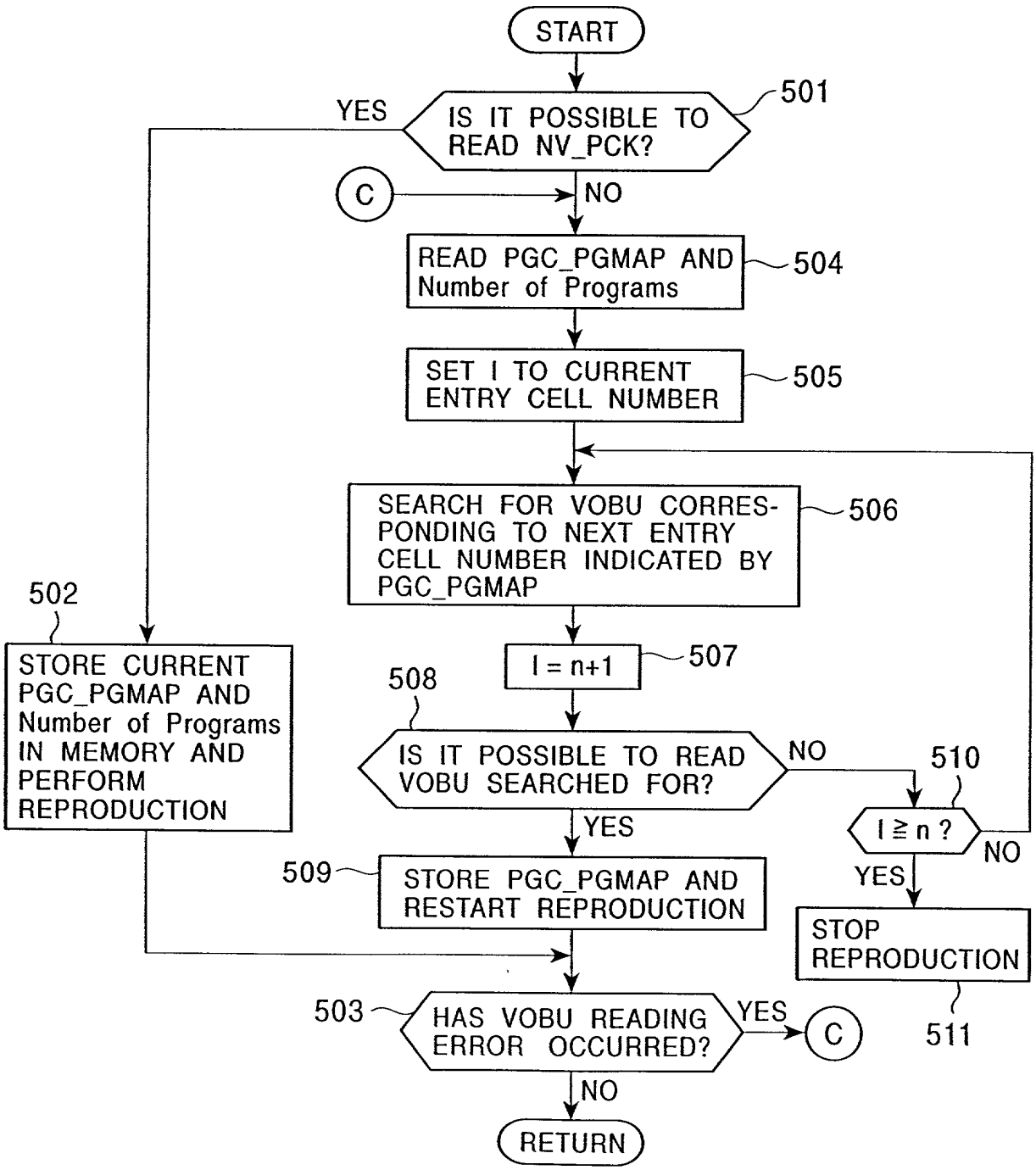

START
IS IT POSSIBLE TO READ NV_PCK?
501
YES
C
NO
READ PGC_PGMAP AND Number of Programs
504
SET I TO CURRENT ENTRY CELL NUMBER
505
SEARCH FOR VOBU CORRESPONDING TO NEXT ENTRY CELL NUMBER INDICATED BY PGC_PGMAP
506
502
STORE CURRENT PGC_PGMAP AND Number of Programs IN MEMORY AND PERFORM REPRODUCTION
I = n+1
507
508
IS IT POSSIBLE TO READ VOBU SEARCHED FOR?
NO
510
YES
I ≧ n ?
NO
YES
509
STORE PGC_PGMAP AND RESTART REPRODUCTION
STOP REPRODUCTION
511
503
HAS VOBU READING ERROR OCCURRED?
YES
C
NO
RETURN

FIG. 12

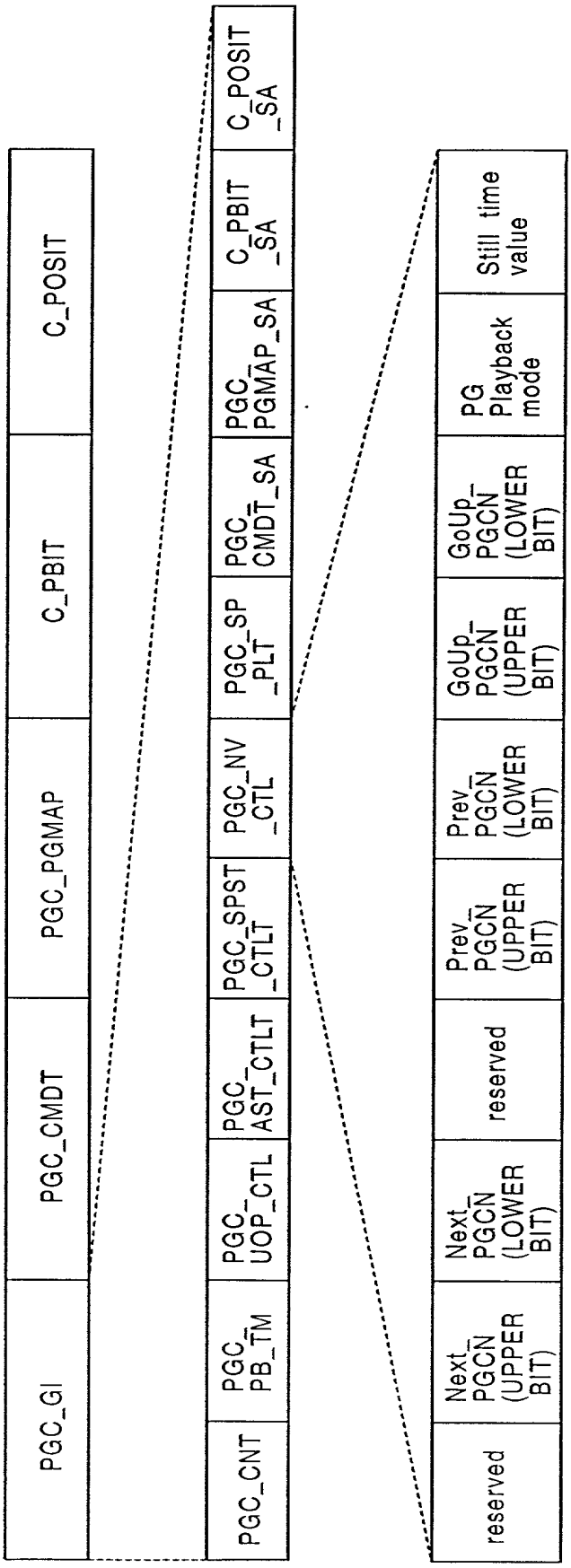

PGC_GI
PGC_CMDT
PGC_PGMAP
C_PBIT
C_POSIT
PGC_CNT
PGC_PB_TM
PGC_UOP_CTL
PGC_AST_CTLT
PGC_SPST_CTLT
PGC_NV_CTL
PGC_SP_PLT
PGC_CMDT_SA
PGC_PGMAP_SA
C_PBIT_SA
C_POSIT_SA
reserved
Next_PGCN (UPPER BIT)
Next_PGCN (LOWER BIT)
reserved
Prev_PGCN (UPPER BIT)
Prev_PGCN (LOWER BIT)
GoUp_PGCN (UPPER BIT)
GoUp_PGCN (LOWER BIT)
PG Playback mode
Still time value

FIG. 13

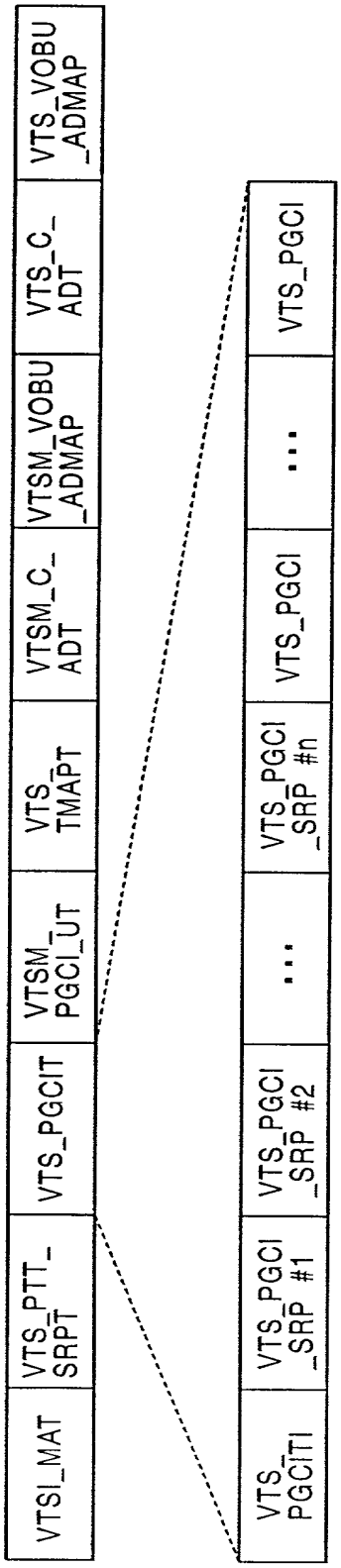
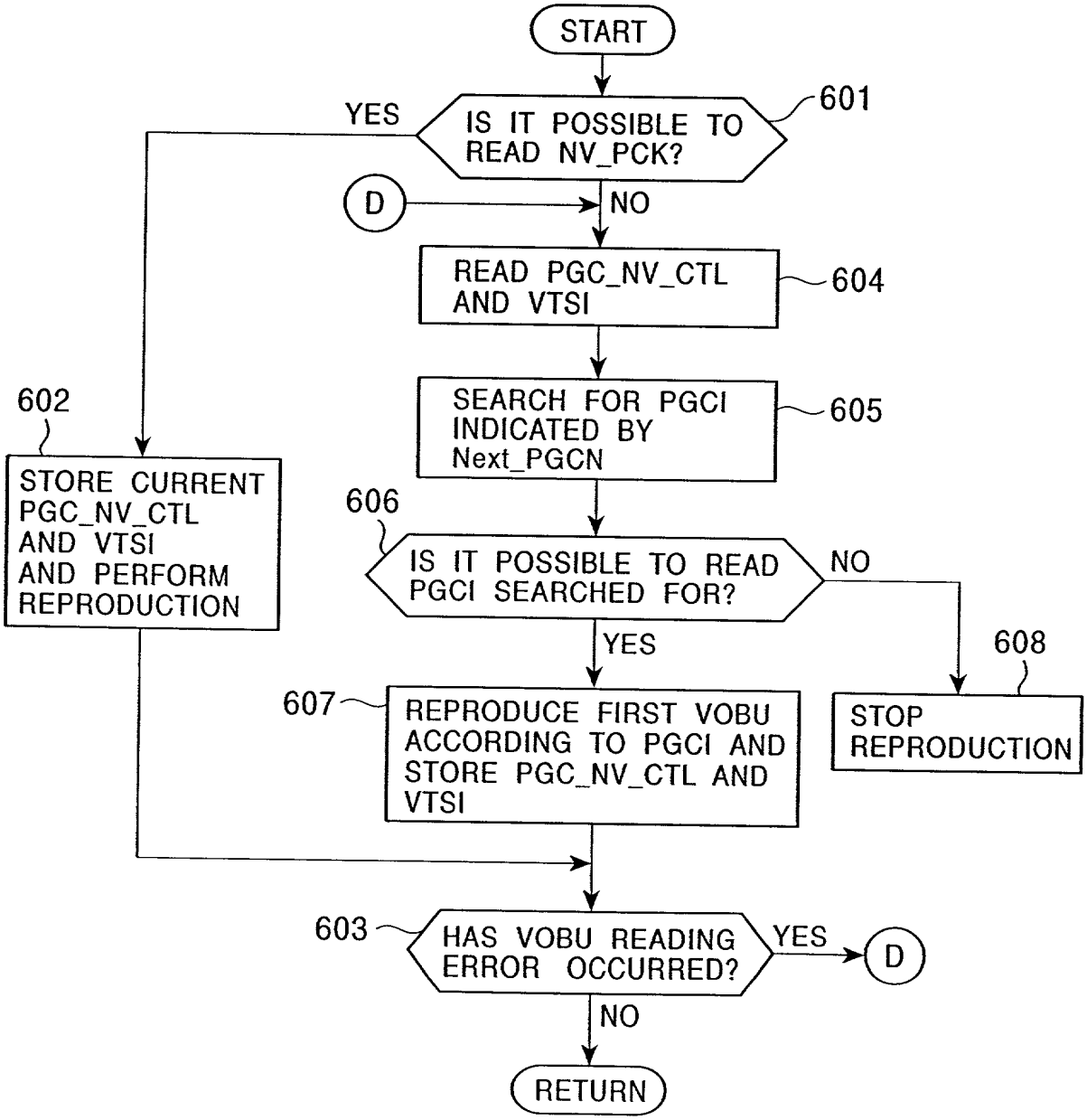

VTSI_MAT
VTS_PTT_SRPT
VTS_PGCIT
VTSM_PGCI_UT
VTS_TMAPT
VTSM_C_ADT
VTSM_VOBU_ADMAP
VTS_C_ADT
VTS_VOBU_ADMAP
VTS_PGCITI
VTS_PGCI_SRP #1
VTS_PGCI_SRP #2
...
VTS_PGCI_SRP #n
VTS_PGCI
VTS_PGCI
...
VTS_PGCI

FIG. 14


START
IS IT POSSIBLE TO READ NV_PCK?
601
YES
D
NO
READ PGC_NV_CTL AND VTSI
604
SEARCH FOR PGCI INDICATED BY Next_PGCN
605
602
STORE CURRENT PGC_NV_CTL AND VTSI AND PERFORM REPRODUCTION
606
IS IT POSSIBLE TO READ PGCI SEARCHED FOR?
NO
YES
608
607
REPRODUCE FIRST VOBU ACCORDING TO PGCI AND STORE PGC_NV_CTL AND VTSI
STOP REPRODUCTION
603
HAS VOBU READING ERROR OCCURRED?
YES
D
NO
RETURN

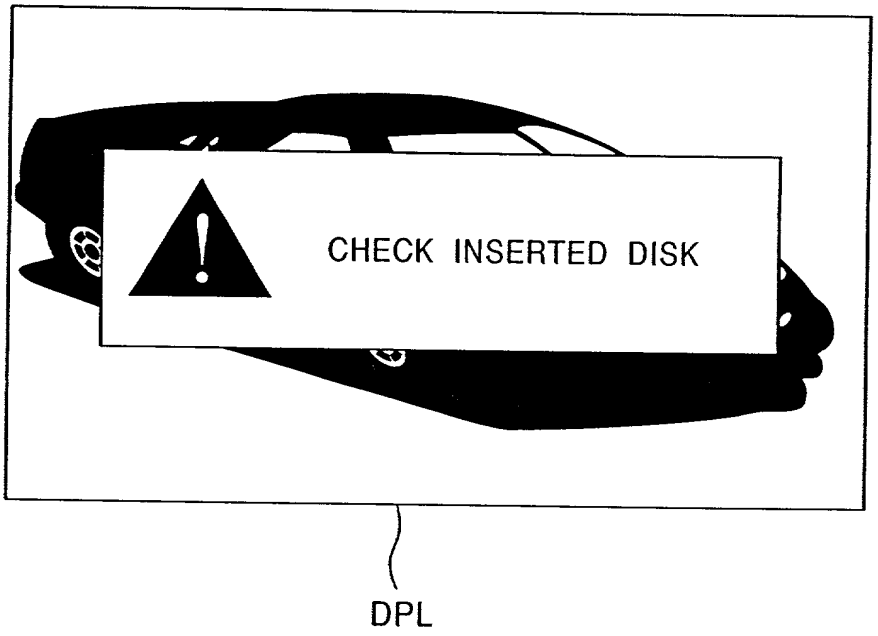



FIG. 15